

1159-97-36

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In this talk we will describe the generalization and justification practices of students in an informal summer mathematics program as they explore a sequence of problems from combinatorial game theory. We find that while study participants readily generate examples and reason recursively when analyzing Nim-like two-player combinatorial games and are able to reach valid conclusions about winning strategies in these games, some obstacles occur in the process of formally justifying these winning strategies. We use study participants' work on these combinatorial game problems as a window into their proof practices in an unfamiliar problem domain and into their understanding of mathematical induction as a strategy for generalizing and formalizing recursive reasoning. (Received July 14, 2020)